THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte AKIHIKO YOSHIDA
and JUN YAMAZAKI

Appeal No. 1997-0061
Application 08/246,140[1]

HEARD: October 18, 1999

Before KRASS, BARRETT, and FRAHM, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

[1] Application for patent filed May 19, 1994, entitled "Cathode-Ray Tube," which claims the foreign priority benefit under 35 U.S.C. § 119 of Japanese Application 5-118535, filed May 20, 1993.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-3.

We reverse.

BACKGROUND

The invention is directed to a fixing spring which is used for securing a color-selecting electrode within a cathode-ray tube display. In particular, Appellants claim a fixing spring having a shape factor K determined by the dimensions of the spring and the weight of the color-selecting electrode.

Claim 1 is reproduced below.

> 1. A cathode-ray tube having a color-selecting electrode which is secured to a fluorescent glass panel with a plurality of fixing springs between said color-selecting electrode and a corresponding plurality of fixing pins on said fluorescent glass panel, wherein said fixing springs have a shape factor K in a range of from 10 mm^3/kg to 100 mm^3/kg, wherein the shape factor K is determined by the following equation:
>
> K=(a thickness of the fixing spring)x(a breadth of the fixing spring)^{2}x(a height of the fixing spring)/(the length of the fixing spring)/(a weight of said color-selecting electrode).

The examiner relies on the following prior art:

Shrader et al. (Shrader)	3,296,477	January 3, 1967
Nakamura et al. (Nakamura)	3,671,794	June 20, 1972
Bauder	5,021,707	June 4, 1991

Claim 1 stands rejected under 35 U.S.C. § 103 as being unpatentable over Shrader and Bauder.

Claims 2 and 3 stand rejected under 35 U.S.C. § 103 as being unpatentable over Shrader, Bauder, and Nakamura.

We refer to the Examiner's Answer (Paper No. 14) (pages referred to as "EA__") and the communication[2] entered July 17, 1996 (Paper No. 16) for a statement of the Examiner's position and to the Substitute Appeal Brief (Paper No. 13) (pages referred to as "Br__"), the Reply Brief (Paper No. 15) (pages referred to as "RBr__"), and the Surreply Brief (Paper No. 17) for a statement of Appellants' arguments thereagainst.

OPINION

Comments

The Examiner correctly interprets claim 1 to mean that the prior art does not need to teach the equation for K, but

[2] This is technically a Supplemental Examiner's Answer.

that it is only necessary to find a prior art spring/color-selecting electrode combination that inherently falls within the claimed range for K when calculated using the equation for K. We appreciate that it is often difficult or impossible to make a prima facie case that some dimensional relationship is inherent in the prior art because patents are not manufacturing documents and seldom provide dimensions. The Examiner also correctly recognized that the burden was on the Patent and Trademark Office to establish a prima facie case of inherency. Therefore, rather than just make an unsupported assertion that prior art fixing springs were within the claimed range, the Examiner found the Shrader patent that discloses spring dimensions. In the Examiner's Answer, the Examiner added the Bauder patent and made a reasonable assumption that the weight of an electrode would be proportional to the area, so that the 3.54 kg mask-frame weight for a 34 inch (diagonal) tube in Bauder (col. 4, lines 14-15) would convert to 1.914 kg (=(300 in^2)(3.54 kg)/(554.84 in^2)) for the 25 inch (diagonal) tube example for which spring dimensions are given in Shrader. Thus, the Examiner provided a factual basis for

the rejection in the Examiner's Answer. Appellants' arguments that "[t]here is simply not enough information set forth in the references to identify the K value of these devices as claimed by Applicants" (Br6) is not persuasive because Shrader and Bauder together provide sufficient information to calculate the K value.

With respect to Appellants' argument that the spring of the disclosed invention and the spring of Shrader have a much different shape and that "[t]here is simply no indication that these two distinctly shaped springs would have similar K values for which a valid comparison could be made" (RBr3), we note that such argument is not commensurate in scope with claim 1. Claim 1 does not recite any special spring shape.

In our opinion, a shape factor K in a range from 10 mm^3/kg to 100 mm^3/kg, wherein the shape factor K is determined by the given equation, does not alone provide the advantages described in the specification. The shape factor equation does not include any terms that would account for material. For example, a stainless steel spring is going to be more resilient than an aluminum spring. Furthermore, the

shape factor equation ignores the specific shape of the spring. For example the length of the spring welded to the spring holder 6 in figure 1 makes a difference in the amount of deformation; a spring in which 1/3 of the length is welded to the spring holder will deform more at the free end (where H is measured) than a spring in which 1/2 of the length is welded to the spring holder. Yet the equation for K makes both springs equal if they have the same length. Nevertheless, since the claims do not recite advantages linked to the shape factor, we view the claims as merely reciting a spring satisfying a particular relationship.

Obviousness

Due to a mathematical error, the Examiner has failed to show that the spring in Shrader inherently has a shape factor K in the claimed range from 10 mm^3/kg to 100 mm^3/kg. The equation for K is as follows:[3]

$$K = t \cdot B^2 \cdot H/W/L$$

[3] The equation in Appellants' figure 5 should have B^2 instead of B.

The Examiner's calculated range of from 23.395 mm^3/kg to 72.15 mm^3/kg is erroneously based on the following equation:

$$K = t \cdot B^2 \cdot H \cdot W/L$$

For example, 23.394 mm^3-kg $=(0.762)(12.7)^2(8.27)(1.9)/82.55$. Note that the units do not agree with the claimed units for K. Before considering what the numbers are using the correct equation, it is necessary to make two observations.

First, we find that only the 0.50 inch minimum width (breadth) in Shrader can be fairly used to calculate to spring shape factor because that is the width of the spring portion and is consistent with the definition of breadth in Appellants' figure 5. The 0.875 inch width is only used on portion 33 where the spring is attached to the plate 36.

Second, we agree with Appellants' argument (RBr3) that the height should be calculated with tan 2 instead of sin 2. Using tan 2 is to the Examiner's benefit. We calculate the height to be (3.25-1.375 inches)tan 10E=0.331 inches=8.40 mm. It is not known how the Examiner arrived at the values

of 13.29 mm^3/kg to 41.01 mm^3/kg using tan 10E(Paper No. 16, page 2).

Recalculating,

$K=(0.762)(12.7)^2(8.40)/(1.9)/82.55=6.58$ mm. This is outside the claimed range. We find no motivation to modify the dimensions in Shrader so as to increase this value and the Examiner has provided none. Accordingly, the rejection of claim 1 is reversed. Nakamura does not cure the deficiency with respect to the rejection of claim 1 over Shrader and Bauder. Therefore, the rejection of dependent claims 2 and 3 is also reversed.

CONCLUSION

The rejections of claims 1-3 are reversed.

REVERSED

ERROL A. KRASS)
Administrative Patent Judge)
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